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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/555,140	08/03/2000	Gunnar-Marcel Klein	178/48916	3885

7590 01/22/2004

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EXAMINER	
SAVAGE, MATTHEW O	
ART UNIT	**PAPER NUMBER**
1723	

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/555,140	KLEIN ET AL.	
	Examiner	Art Unit	
	Matthew O Savage	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13,15-22,35 and 36* is/are pending in the application.

4a) Of the above claim(s) *25-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13, 15-22, 35, and 36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

The amendment filed on 12-23-03 has been entered.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The limitation "the discharge layer is comprised of a predominantly cellulose containing filter paper" recited in claim 13 lacks antecedence in the specification.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 36 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The limitation of the discharge layer having a weight per unit area of "at least about 50 g/m^2" recited in claim 36 includes values above 200 g/m^2 and is considered new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13, 15-22, 35, and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 13 and 35, it is unclear as to what range "about" implies.

Claim 15 is redundant of the limitation recited in claim 13.

Concerning claims 13, 16, 35, and 36, it is unclear as to degree of compression "compressed" implies.

Concerning claim 36, it is unclear as to what range "at least about" implies.

With respect to claim 21, it is unclear as to how the discharge layer can have 50% synthetic fibers as implied by the limitation "up to 50% of synthetic fibers" when independent claim 13 specifies that the discharge layer is predominantly cellulose.

Concerning claims 13, 35, and 36, it is unclear as to what structure "successive layers in said flow direction exhibit an increasing degree of separation and decreasing storage capacity" implies. For example, does "increasing degree of separation" imply that each successive layer has a smaller pore size than that of the preceding layer, or does the limitation simply imply that the number of particles remaining in the fluid flow decreases with each successive layer? In addition, it is unclear as to how storage capacity is defined. For example, is the storage capacity of each layer based upon a particular particle size that is the same or different for each layer, or is the storage capacity based on the total void space of each layer.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 15-17, 21, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadoya in view of Sabee or Togashi et al.

With respect to claims 13, 35, and 36, Kadoya discloses a filter element (see FIGS. 1-6) having a plurality of layers 5, 2 joined together (e.g., by thermal fusing, see lines 1-4 of col. 3), the successive layers in the flow direction exhibiting an increasing degree of separation and a decreasing degree of storage capacity (e.g., with respect to larger diameter particles, see lines 5-38 of col. 3), the inflow layer 5 being comprised of synthetic fibers of a nonwoven web (e.g., rayon and polyester, see lines 67-68 of col. 2) and the discharge layer 2 being comprised of a predominantly cellulose containing filter paper (e.g., linter and pulp, see lines 65-66 of col. 2), the filter paper layer being considered "compressed" since it has a higher density that that of the other layers and/or because paper is made by a compression process, the layers having surface weights that lie within applicant's claimed range (see the thickness values and density values disclosed in col. 3, lines 5-14, and lines 45-64). Kadoya fails to specify the non-woven web as being "melt-blown". Sabee discloses an analogous non woven fabric (e.g., composed of rayon and polyester, see lines 25-65 of col. 7) formed by a melt

blowing process (see lines 14-63 of col. 6) and suggests that such a fabric has a uniform porosity and is suitable for use as a filter medium (see from line 55 of col. 5 to line 14 of col. 6). It would have been obvious to have modified the filter of Kadoya so as to have included a melt-blown non woven web as suggested by Sabee in order to provide a web having a uniform porosity. Alternately, as best understood, Togashi et al disclose the concept of using an inflow layer formed of a melt blown non woven web positioned upstream of a discharge layer formed of a finer filter medium and suggests that such an arrangement increases the dust holding capacity of the filter. It would have been obvious to have modified the filter of Kadoya so as to have included an inflow layer formed of a melt blown non woven web as suggested by Togashi et al in order to improve the dust holding capacity of the filter

As to claim 15, Kadoya discloses at least three medium layers joined together as recited in the claim (see FIGS. 3-6).

Regarding claim 16, Kadoya discloses an intermediate medium layer 5b (see FIGS. 3-6) that is considered compressed with respect to the inflow side layer 5a since it has a higher density that that of the inflow side layer 5a (see lines 56-57 of col. 3), and Sabee discloses a melt blow non-woven web.

Concerning claim 17, Kadoya discloses a star folded filter element (see FIG. 7).

Regarding claim 21, Kadoya discloses a cellulose containing filter layer including up to but not including 50% synthetic fibers (e.g., 15% rayon fibers, see lines 65-68 of col. 2).

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadoya in view of Sabee or Tagashi et al as applied to claim 13 above, and further in view of applicant's admission on lines 17-33 of page 10 of the appeal brief filed on 11-22-02.

Kaydoya discloses the filter medium as being folded to form pleats as recited in claim 19 (see FIGS. 7-9). Kadoya, Sabee, and Tagashi et al fail to disclose the layers of filter medium as being welded together by ultrasound as recited in claim 18, the layers of filter media being joined together by surface pressure by a folding process as recited in claim 19, or the layers of filter media as being adhesively bonded together by gluing with a powdered adhesive or with a hot melt impregnating agent as recited in claim 20, however, applicant admits that such arrangements are well known in the art on lines 17-33 of page 10 of the appeal brief filed on 11-22-02. Accordingly, it would have been obvious to have modified the filter suggested by Kadoya and Sabee so as to have included the well known bonding arrangements recited in claims 18-20 in order to facilitate construction of the filter utilizing joining techniques that were well known in the art.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kadoya in view of Sabee or Togashi et al as applied to claim 21 above, and further in view of EP 338,479 to Klimmek et al.

Kadoya, Sebee, and Togashi et al fail to specify the cellulose containing filter layer as including glass fibers. Klimmek et al disclose an analogous filter that includes a

filter paper support layer including glass fibers and suggests that the fibers increase the strength of the filter paper layer. It would have been obvious to have modified the cellulose containing layer suggested by Kadoya so as to have included glass fibers as suggested by Klimmek et al order to increase the strength of the paper layer.

Applicant's arguments filed 12-23-03 have been fully considered but they are not persuasive.

Applicant's argument that "predominantly cellulose containing" implies a cellulose composition down to but not including 50% consistent with the common dictionary meaning of the term is noted and agreed with. Accordingly, the associated rejection of claims 13, 35, and 36 under 35 U.S.C. 112, second paragraph has been withdrawn.

Applicant's amendment to claim 19 specifying the filter medium as having pleats has obviated the associated rejection under 35 U.S.C. 112, second paragraph.

Applicant's argument that compressed filter paper differs from filter papers that are not compressed is not deemed persuasive since all filter papers are to some extent compressed during the manufacturing process.

Applicant's argues that the range associated with the term "at least about" recited in claim 36 is not indefinite since one skilled in the art could determine the tolerances required for a specific application, however, it is held that such a standard is unacceptable since it would lead to ranges or tolerances were variable and therefor indefinite. It is suggested that the term "at least about" as well as "about" be removed

from the instant claims since the tolerances associated with the term "about" have not been adequately disclosed in the specification.

Applicant argues that the discharge layer 2 disclosed by Kadoya cannot have a storage capacity since the drawing depicts the layer as a sieve, however, it is held that the linear structure of the pores 4 shown in the drawing Figures is not considered an accurate in the instant case since filter paper inherently includes non linear pores capable of storing particles therein. In addition, Kadoya expressly discloses the discharge layer as having a storage capacity since the reference high density filter paper 2 forming the discharge layer as functioning to catch dust particles that have passed through dust cake layer 6 and non wove fabric 5 (see lines 17-31 of col. 3).

Applicant's argument that Kadoya fails to disclose an inflow layer having the recited surface weight range of 15-150 g/m^2 is not agreed with since the uppermost inflow layer could have a surface weight of 60-120 g/m^2 in the case of the FIG.3 embodiment assuming the upper layer 5a has a density of .1 $g.cm^3$ and thickness .6 mm, 1.2., one half of the total thickness of which is clearly suggested by the drawing Figures. Alternately, varying the thickness, or ultimately, the surface weight of the inflow layers would have been obvious to one skilled in the art in order to optimize the storage capacity of the inflow layer for a particular application since Kadoya discloses that dust is stored within the non-woven layer 5a (see lines 23-26 of col. 3 as well as FIGS. 2 and 4).

Applicant argues that Kadoya fails to disclose upstream layers having decreasing storage capacities for large particles, however, it is held that the reference clearly

discloses such a feature, in the case of the FIG. 1 embodiment since the reference discloses that the upstream layer traps and collects large particles whereas the downstream layer traps and collects only smaller particles (see lines 17-31 of col. 3). Accordingly, the upstream layer 5 has a higher storage capacity for large particles than that that of the downstream layer 2 since the downstream layer cannot trap the larger particles. Alternately, it is clear that the upstream layer has a larger storage capacity than the downstream layer assuming a particle size that can be trapped in both layers since the upstream layer has a lower density, a larger thickness, a larger pore size, and therefor a greater void space for collecting partciles than that of the downstream layer.

This office action includes new grounds for rejection under 35 U.S.C. 112, first and second paragraphs. Accordingly, this action has been made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O Savage whose telephone number is (571) 272-1146. The examiner can normally be reached on Monday-Friday, 6:00am-2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda W. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1101.

M. Savage

Matthew O Savage
Primary Examiner
Art Unit 1723

mos
January 14, 2004